**IN THE UNITED STATES DISTRICT
COURT FOR THE EASTERN DISTRICT
OF VIRGINIA NORFOLK DIVISION**

Latasha Holloway, *et al.*,	
Plaintiffs,	
	Civil Action No. 2:18-cv-0069
v.	
City of Virginia Beach, *et al.*,	
Defendants	

**DEFENDANTS' MOTION TO EXCLUDE PLAINTIFFS' SUPPLEMENTAL
EXPER REPORTS AND OPINIONS**

PLAINTIFFS' EXHIBIT 4

Response to Peter Morrison's Report by
Anthony E. Fairfax

Expert Report of Anthony E. Fairfax

Response to Peter Morrison's Report

Anthony E. Fairfax

16 Castle Haven Road

Hampton, VA 23666

August 26, 2019

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I. Introduction

I have been retained by counsel representing the Plaintiffs in this lawsuit *(Holloway, et al v City of Virginia Beach et al)* to determine whether it is possible to draw an Illustrative Plan with one or more majority Latino (Hispanic), Black, and Asian ("HBA") combined districts in the City of Virginia Beach, VA. In addition, I was also asked to review past and recent demographics pertaining to the city.

This additional report serves as a response to Dr. Peter A. Morrison's report (dated August 12, 2019) which evaluated my initial July 15th report expert report.

My qualifications can be found in my prior expert report and I am being compensated at a rate of $180 per hour.

II. Background

The City of Virginia Beach, VA currently has an eleven-member City Council structure. Three (3) Council members and the Mayor serve "at large" with no district residency requirement. The other seven (7) council members are required to live in the district that they represent. However, all city council members are elected at large and <u>not</u> within the district that they represent.

On July 15, 2019 I submitted an expert report for this case that presented my finding that the minority population in the city of Virginia Beach, Virginia was sufficiently large and geographically compact to constitute two majority Hispanic, Black, and Asian ("HBA") combined districts. On August 12, 2019, Dr. Peter A. Morrison submitted his evaluation of my initial expert report.

III. Summary of Dr. Morrison's Findings and Response

The report of Dr. Morrison outlines several disagreements with my initial report. The first is that he claims the Illustrative Plan's majority minority districts' Total HBA Citizen Voting Age Populations ("CVAP") do not constitute a majority. Using an Iterative Proportional Fitting (IPF) technique, he calculates the CVAP of the two districts as 49.9% (District 1) and 49.6% (District 2) versus my calculations of 50.03% for District 1 and 50.04% for District 2. The second disagreement centers around alleged inconsistences in the census block data reflecting the CVAP values. Finally, his last disagreement with my initial report lies with the use of Hispanic, Black and Asian populations combined. He states that this presumes that political cohesiveness exists between Hispanics, Blacks, and Asians. I address each of Dr. Morrison's claims below.

Dr. Morrison's three claims pertaining to my initial report are incorrect, and do not change my conclusions in this case. First, several illustrative plan districts that significantly exceed a majority (50%) of CVAP can be drawn, and the initial Illustrative Plan was shown to further exceed 50% CVAP when the addition of the Black and White combined race category data is included (51.11% and 51.08% for District 1 and 2, respectively).[1] Several alternative plans were found to exceed 50% by almost 6% (55.7%) for District 1 and almost 3% (52.7%) for District 2.

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[1] The Black and White race category includes those persons who select both Black (or African American) and White race categories on the census survey form.

A single majority HBA district was also developed that exceeded 50% by more than 8% (58.9%). These alternative plans clearly verify that at least one majority HBA CVAP district can be developed and developed to eliminate any "point" estimate issues.

Dr. Morrison's claim of inconsistent data is inaccurate and irrelevant. If districts were made up of a few census blocks, Dr. Morrison's point might carry more weight. However, the Illustrative Plan's districts and alternative plans' districts are made up of hundreds of census blocks, which diminishes the census block data variations to virtually nil. The change in final district's HBA CVAP percentages were found to be extremely small and, in most cases, significant only to the third decimal place.

Finally, Dr. Morrison's claim that I presume cohesiveness among Hispanic, Black, and Asian voters was simple to address, since considering it is not part of the *Gingles* first prong precondition, and thus is not analyzed in this report. Also, the data indicates that the Hispanic, Black, and Asian populations tend to reside in the same communities. This analysis was shown in my initial expert report, is unrebutted by Dr. Morrison, and is reiterated in this response report.

Despite Dr. Morrison's claims, the HBA population in Virginia Beach is sufficiently large and geographically compact to constitute a majority in two single-member districts that would likely be able to elect their candidates of choice.

Although Dr. Morrison may prefer the IFP method for disaggregation, the Maptitude method of disaggregation that I used is also a commonly used and reliable technique that produces accurate results. Further, when black and white combined data is considered, Districts 1 and 2 in the Illustrative Plan have even higher CVAP percentages.

In addition to the Illustrative Plan that I included in my initial report, it is possible to draw a number of additional alternative plans with two majority HBA CVAP districts. When analyzing all of the plans using total population, VAP, and CVAP, there are only two instances where the HBA percentage are below 50% (Both of these instances are using 2010 VAP data that were surveyed years ago (the Illustrative Plan and Alternative 4 plan)).

It is also possible to draw plans with at least one HBA majority CVAP district, which is still more than contained in the current City Council plan (which has zero). It is also possible to draw a majority Hispanic and Black CVAP district.

Dr. Morrison's conclusion about the inconsistent disaggregation of data at the census block level is meritless in practice. The Illustrative Plan's districts consist of hundreds of census blocks, which diminishes any variation from the disaggregation process, and the differences are minute with no practical impact on my results or conclusions.

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IV. Response to Dr. Morrison's Claim Regarding CVAP of Districts 1 and 2 in Illustrative Plan

Dr. Morrison's claim that the Illustrative Plan's Districts 1 and 2 do not have a majority HBA CVAP relies on his use of an alternative disaggregation method, Iterative Proportional Fitting ("IPF"), that he alleges results in CVAP values of 49.99% for District 1 and 49.96% for District 2. He also argues that the majority HBA CVAP percentages of 50.03% (District 1) and 50.04% (District 2) that I report are "point estimates" and "razor-thin."

First, it is important to note that assuming that Dr. Morrison's IPF disaggregation process is correct, it only yields a difference of .04% for District 1 and .08%. for District 2.[2] These amounts on their face are extremely negligible, especially when considering that two different techniques were used. Dr. Morrison's calculated amounts also clearly round to 50%. Further, the Maptitude disaggregation process that I utilized is a commonly used and accepted method in the field, and it provides accurate estimates.[3] However, even if Dr. Morrison calculated his estimates correctly and even if his preferred method for disaggregation were accepted, his point is also ultimately irrelevant, because it is possible to produce a number of additional alternative plans with two majority HBA CVAP districts with higher percentages.

In addition, the initial Illustrative Plan's HBA CVAP percentages for District 1 and District 2 are higher when considering the Black and White combined race categories, as presented on page 21 and Appendix D of my initial report, and Table 1 below. District 1 increases to 51.11% while District 2 increases to 51.08% (see Table 1). Given the small differences (.04% and .08%) in the two disaggregation processes, if Dr. Morrison added the Black and White race categories using the IPF techniques, his calculations should yield similar outcomes to the ones that I obtained. Consequently, adding Black and White race categories, Districts 1 and 2 clearly exceed 50% majority-minority HBA CVAP.

Table 1 – Illustrative Plan - HBA & HBA plus B/W using CVAP (2013-17 ACS)			
District	**CVAP 13-17ACS**	**HBA CVAP 13-17ACS**	**HBA CVAP plus Black/White 13-17ACS**
1	29761	14888	15210
2	32804	16415	16755
District	**% CVAP 13-17ACS**	**% HBA CVAP 13-17ACS**	**% HBA CVAP plus Black/White 13-17ACS**
1	29761	50.03%	51.11%
2	32804	50.04%	51.08%

Source: U.S. Census Bureau 2013-2017 5 Year ACS Block Group data, Maptitude for Redistricting Illustrative Plan
Note: 13-17ACS - 2013-2017 5-Year ACS; Black/White included Black and White combined race persons

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[2] Even this amount may be explained due to Dr. Morrison apparently using Total Population as the weighted census block to block group ratio instead of Voting Age Population (VAP) as I used, which is not an apples-to-apples comparison. For the analysis I present here, VAP is the more accurate weighted ratio to use since it is closer to the true citizen voting age population.

[3] Further discussion of Maptitude's disaggregation techniques is included in the section of my report below addressing Dr. Morrison's claim regarding alleged inconsistent census block values (see Section V).

Second, as I mentioned above, the Illustrative Plan is not the only possible way to draw two single-member majority HBA CVAP districts for the city of Virginia Beach, VA. As stated in the conclusions of my initial report, the Illustrative Plan is only demonstrative and a number of other configurations that result in two majority HBA CVAP districts can be drawn. I include three additional plans with two majority HBA-CVAP districts below.

For instance, with only minor changes to the districts, an alternative plan (Alternative 1) can be created with an HBA CVAP percentage of 51.50% for District 1 and 51.63% for District 2 (see Table 2 and Figure 1).[4]

In addition to containing a majority of single race alone HBA CVAP, the HBA CVAP% including persons that identify as *both* Black and White in Districts 1 and 2 in the Alternative 1 plan yields percentages of 52.64% and 52.62% HBACVAP, respectively (see Appendix A).

	Table 2 – Illustrative Alternative 1 Plan - Major Race/Ethnicity using CVAP (2013-17 ACS)						
District	**CVAP 13-17ACS**	**Dev**	**HCVAP 13-17ACS**	**WCVAP 13-17ACS**	**BCVAP 13-17ACS**	**ACVAP 13-17ACS**	**HBACVAP 13-17ACS**
1	28300	-2091	2119	12609	9056	3407	14575
2	32634	-1822	2346	15004	13141	1387	16851
District	**% CVAP 13-17ACS**	**% Dev**	**% HCVAP 13-17ACS**	**% WCVAP 13-17ACS**	**% BCVAP 13-17ACS**	**% ACVAP 13-17ACS**	**% HBACVAP 13-17ACS**
1	28300	-4.77%	7.49%	44.55%	32.00%	12.04%	51.50%
2	32634	-4.16%	7.19%	45.98%	40.27%	4.25%	51.64%

Note: 13-17ACS - 2013-2017 5-Year ACS
Source: U.S. Census Bureau 2013-2017 5 Year ACS Block Group data, Maptitude for Redistricting Illustrative Plan

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[4] As with the initial Illustrative Plan, the alternative plan's HBA CVAP totals were summed prior to disaggregation, thus minimizing the potential disaggregation error from three (Hispanic, Black, and Asian CVAP summed together) to one HBA CVAP total. This technique minimizes the disaggregation error associated with the totals, specifically when the total is the focal point (as with a majority minority determination). Thus, the disaggregated totals for Hispanic, Black and Asian combined may not add to the HBA CVAP totals. The Total Pop HBA using the 2013-2017 was calculated by summing the three fields together (See Appendix A).
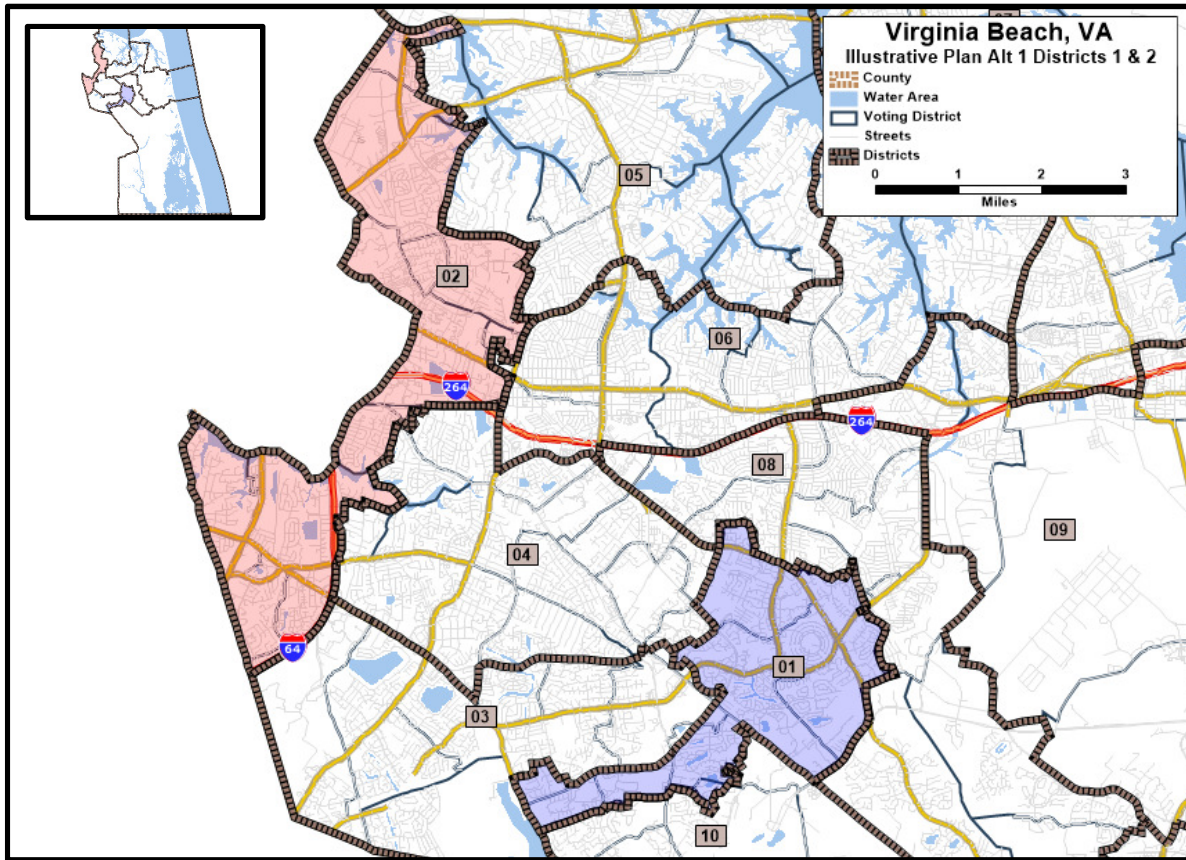
Source: Illustrative Alternative 1 Plan for Virginia Beach, VA using Maptitude for Redistricting

Figure 1 – Virginia Beach Illustrative Alternative 1 Plan with
Two Majority HBA CVAP Districts with slight changes

It is also possible to draw a second alternative plan (Alternative 2) with two single-member
majority HBA CVAP districts, using census block groups only (see Figure 2). Alternative 2 has a
HBA CVAP of 51.04% for District 1 and 51.07% for District 2, respectively (increased to
52.15% for District 1 and 52.12% District 2 when Black and White combined data is
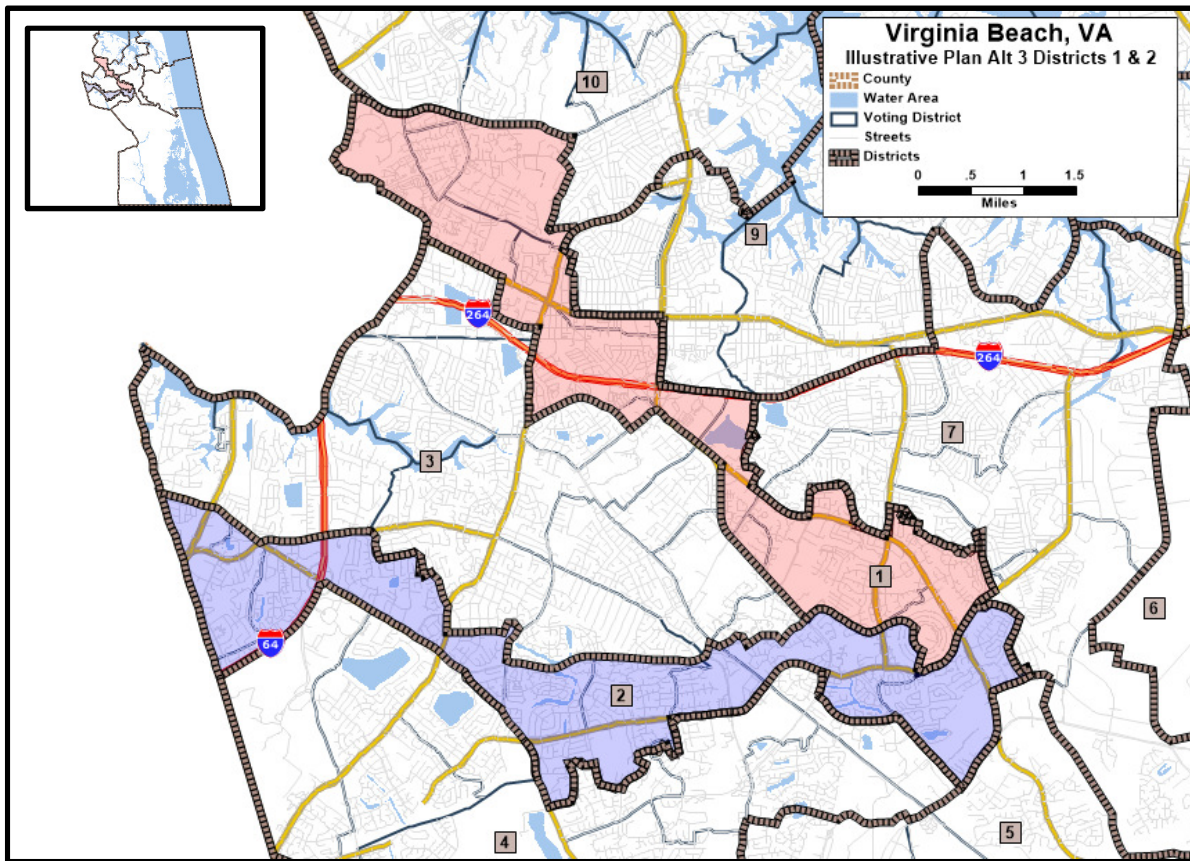considered). This plan will be discussed further in Section V.

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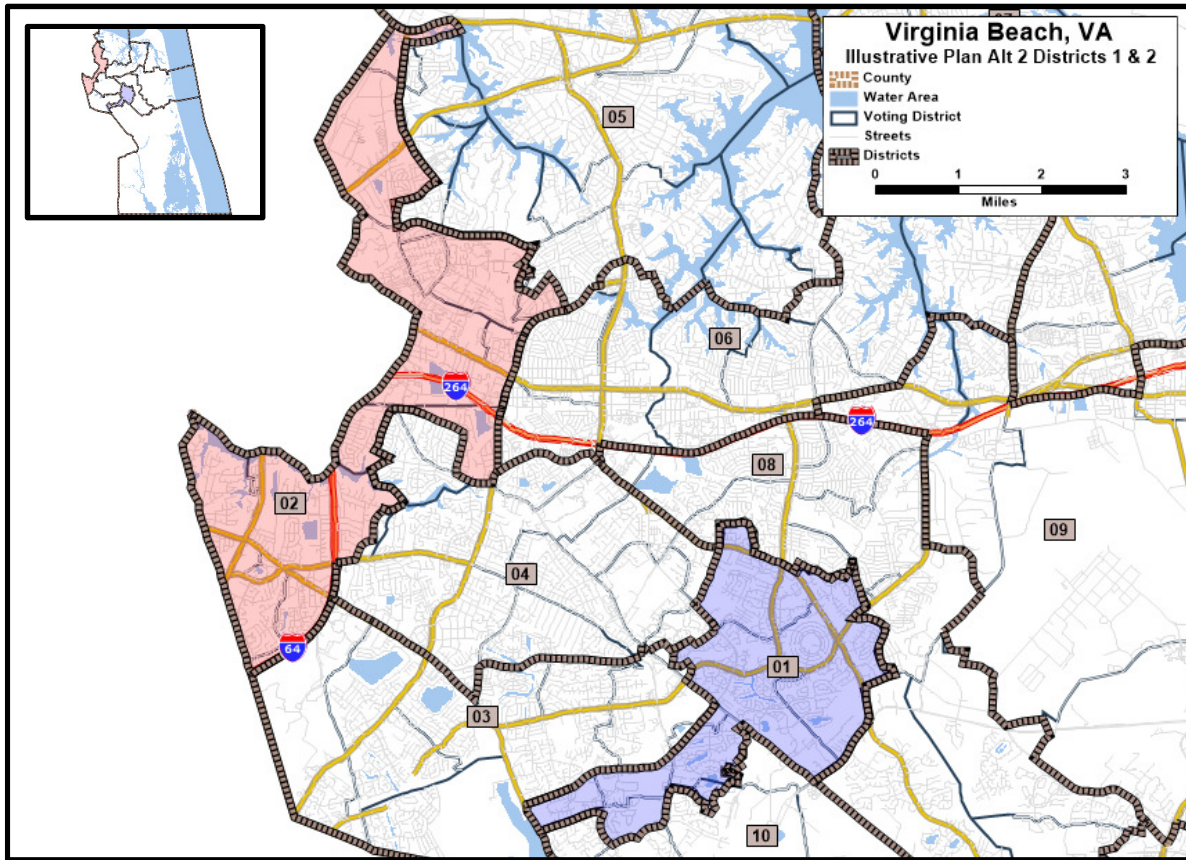
Source: Illustrative Alternative 2 Plan for Virginia Beach, VA using Maptitude for Redistricting

Figure 2 – Virginia Beach Illustrative Alternative 2 Plan with
Two Majority HBA CVAP Districts using Block Groups Only

A third alternative plan (Alternative 3) includes two districts with HBA majority CVAP percentages and encompass different geographic locations than the initial Illustrative Plan (see Figure 3). The total HBA CVAP percentages in Alternative 3 are 54.47% for District 1 and 51.92% for District 2. When the Black and White combined data is considered, the percentages increase to 55.72% for District 1 and 52.75% for District 2.

Alternative 3 also reveals that a Majority Hispanic, Black, and Asian combined district using the 2010 Voting Age Population (VAP) data could have been developed. The HBA VAP in 2010 would have been the likely dataset that would have been used if the city of Virginia Beach chose to develop a majority HBA VAP district during the 2010 redistricting cycle.[5] District 1's VAP in 2010 is 54.05% and District 2 is 51.32% using 2010 VAP census data (see Appendix A).

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[5] The CVAP data that would have also been available during the 2010 redistricting cycle would have been the 2005-2009 5-Year ACS. This dataset would most likely have been too old to use (since it midpoint is 2007) and thus reliance on 2010 VAP would have been more likely.

Source: Illustrative Alternative 3 Plan for Virginia Beach, VA using Maptitude for Redistricting

Figure 3 – Virginia Beach Illustrative Alternative 3 Plan with Two Majority HBA CVAP Districts in different geographic locations

Further, given that it is possible to draw multiple plans with two majority HBA combined CVAP districts, it is also possible to draw a plan that at the very least contains one majority HBA CVAP district. The current City Council plan has zero majority HBA combined CVAP districts (see Appendix D in my initial report). Nothing in Dr. Morrison's report disputes this point. The first *Gingles* precondition reads:

> "The minority group must be able to demonstrate that it is sufficiently large and geographically compact to constitute a majority in **a** single-member district."[6]

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[6] *Thornburg v. Gingles*, 478 U.S. 30 (1986)

Therefore, as long as at least *one* majority HBA combined CVAP district can be drawn, the first *Gingles* precondition would be satisfied. It is possible to draw several plans with one HBA combined CVAP district, and I include an example, Alternative 4, below.

Alternative 4 (Figure 4) includes a single member district with an HBA CVAP percentage of 50.58% (51.46% with the addition of Black and White combined data). This Majority HBA CVAP district did <u>not</u> split any Voting Tabulation Districts (VTDs).[7]
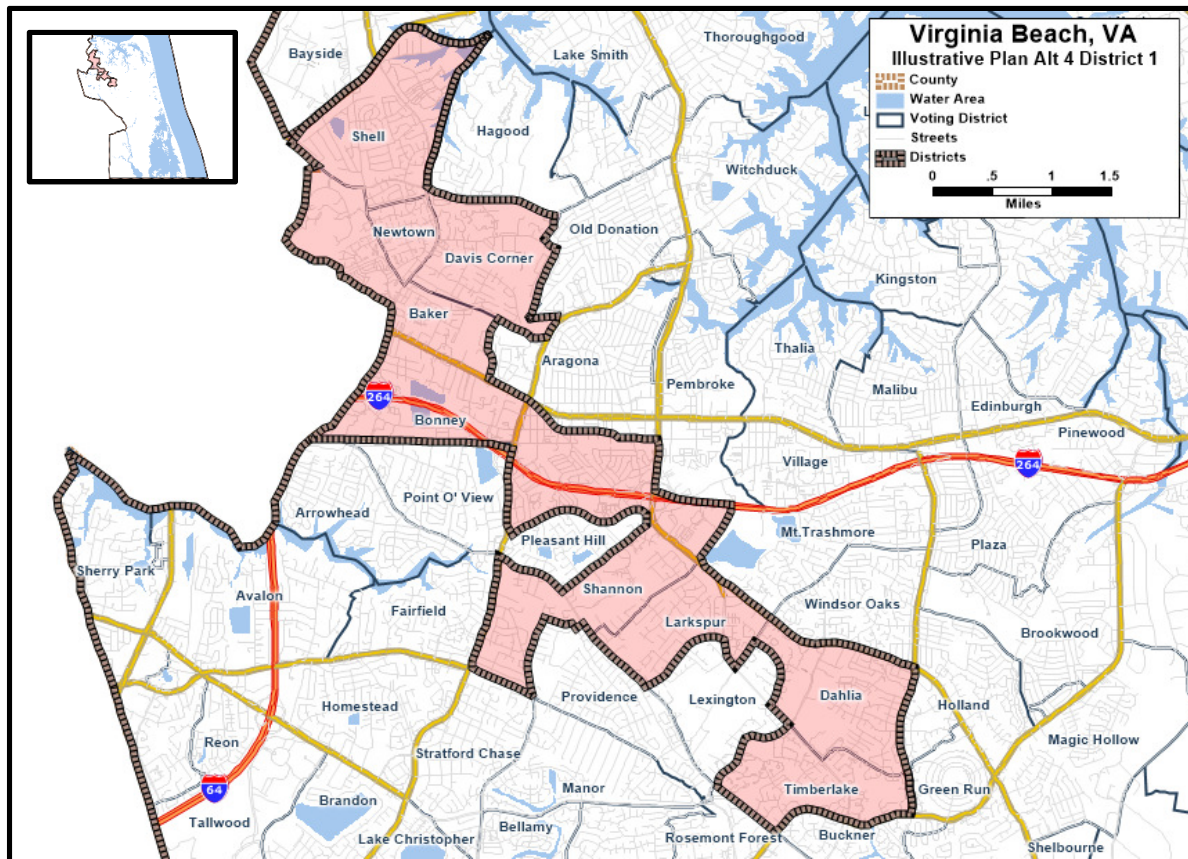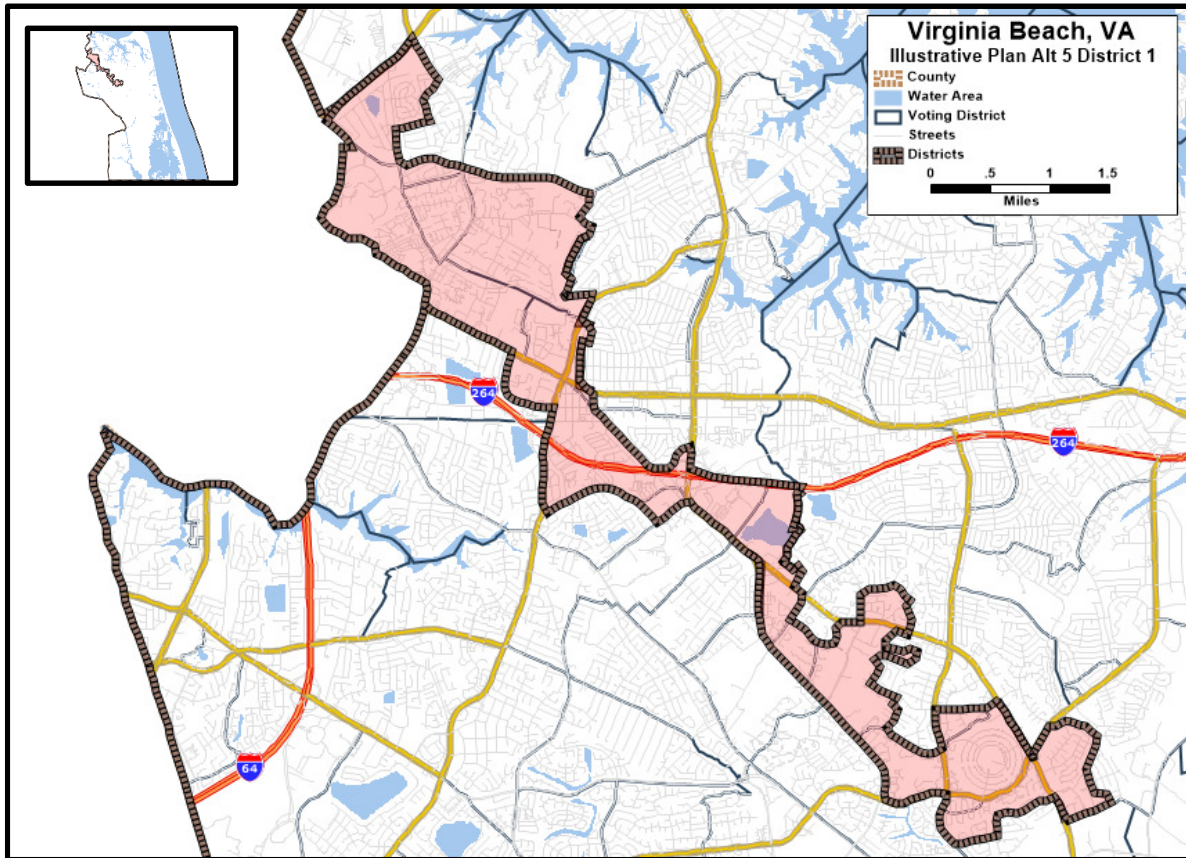

Source: Illustrative Alternative 4 Plan for Virginia Beach, VA using Maptitude for Redistricting

Figure 4 – Virginia Beach Illustrative Alternative 4 Plan with
a Majority HBA CVAP District w/No Split VTDs

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[7] Voting Tabulation Districts are generated by the Census Bureau and commonly used synonymously as precincts during the redistricting process. VTDs follow census block boundaries while precincts may not.

In addition, although the focus of the analysis was to draw majority Hispanic, Black and Asian combined districts, another plan alternative was generated that verifies that, at a minimum, a majority Hispanic and Black CVAP district can be drawn (see Figure 5). Alternative 5 shows a majority district with a Hispanic and Black CVAP of 51.04%. When Black and White combined data is considered, the district's CVAP increases to 52.17%.[8]

Source: Illustrative Alternative 5 Plan for Virginia Beach, VA using Maptitude for Redistricting

Figure 5 – Virginia Beach Illustrative Alternative 5 Plan with
a Majority Hispanic and Black CVAP District

Finally, the analysis that I performed utilized 2013-2017 5-Year ACS as the most recent data to determine district HBA CVAP percentages. These data as well as the 2010 decennial data provide numbers that occur in the past and not current demographics. Comparing the 2013-2017 5-Year ACS with the 2008-2012 5-Year ACS, the city of Virginia Beach increased 1.55% in its HBA CVAP percentage. The one-year 2017 ACS data for the city shows that there was an additional 1.75% increase in HBA CVAP percentage. Given that the HBA CVAP population in

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[8] Alternative Plan 5 has a HBA CVAP percentage of 57.75% (58.89% with the addition of Black and White race combined data).

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Virginia Beach has grown considerably over the past two decades and continues to increase, the Illustrative and alternative plans' current HBA CVAP percentages for the majority-minority districts are ultimately likely to be higher than the values shown in this report's analysis.

V. Response to Dr. Morrison's Claim of Inconsistent Disaggregated Data

Dr. Morrison claims that the disaggregated census block data used to generate the total Hispanic, Black and Asian combined CVAP is "untrustworthy." This claim is meritless. Dr. Morrison points to examples where the block level data shows instances where the CVAP is exceeded by the combined values of Hispanic, Black, and Asian CVAP populations. However, the CVAP may exceed the combined values of Hispanic, Black, and Asian CVAP populations at the census block level and still be trustworthy data at the district and other geographic levels.

If we were interested in analyzing a district the size of a single census block or a small number of census blocks, it is possible that errors in the disaggregation process may be worth considering. However, that is not the case here. Each city council district in the illustrative plans consists of *hundreds* of census blocks, not a handful that would amplify the disaggregation error.

In order to demonstrate why the CVAP data totals occasionally have census blocks that are exceeded by the combined values of Hispanic, Black, and Asian CVAP populations, I will explain the Maptitude for Redistricting ("Maptitude") disaggregation process.[9]

The Maptitude software includes a process that disaggregates a population value of a larger geographic area to a lower sub geographic area.[10] This disaggregation is necessary when drawing a redistricting plan in order to assess the CVAP populations within the district. In this particular case, Maptitude was used to disaggregate CVAP data from the block group level to the census block level. Census blocks are the building blocks of districts.

The following is a simple example to calculate CVAP for a census block. If the VAP of a census block group contains 1,000 people and a census block contained within the block group contains 100 people, Maptitude would use 10% or multiply by .1 to determine the CVAP at the block level. Thus, if 500 persons was the CVAP for the block group, 50 would be the estimated CVAP for the census block.

This straightforward example provides the first step in Maptitude's disaggregation process. However, there are many instances when the estimate for the census block equals an integer (a positive whole number) plus a fraction of persons (e,g, 4.5 persons). Because of this occurrence, Maptitude adds a second step. The second step ensures that all blocks contain whole numbers.

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[9] Maptitude is one of the most commonly used software systems by state and local governments, educational institutions, and interest groups for drawing redistricting plans (See Appendix C for partial client list via Caliper website. Source: https://www.caliper.com/mtrnews/clients.htm).

[10] Maptitude has two different disaggregation functions. One for wholly contained matching census geography (which was used in this effort) and the other for non-wholly contained and overlapping geographic areas.

The second step[11] strips the fractions of persons and assigns them to the largest populated block within the block group. The assignment of these persons eliminates the fractions of persons and increases the population of the largest populated block, but not by a significant amount in most cases.

Figure 6 below shows an actual and typical example of Maptitude's disaggregation process. Figure 6 shows block group 518100422024 in Virginia Beach, VA. It consists of 5 census blocks. The bright red color highlights the largest populated block. The number within each block contains the disaggregated CVAP for each census block.
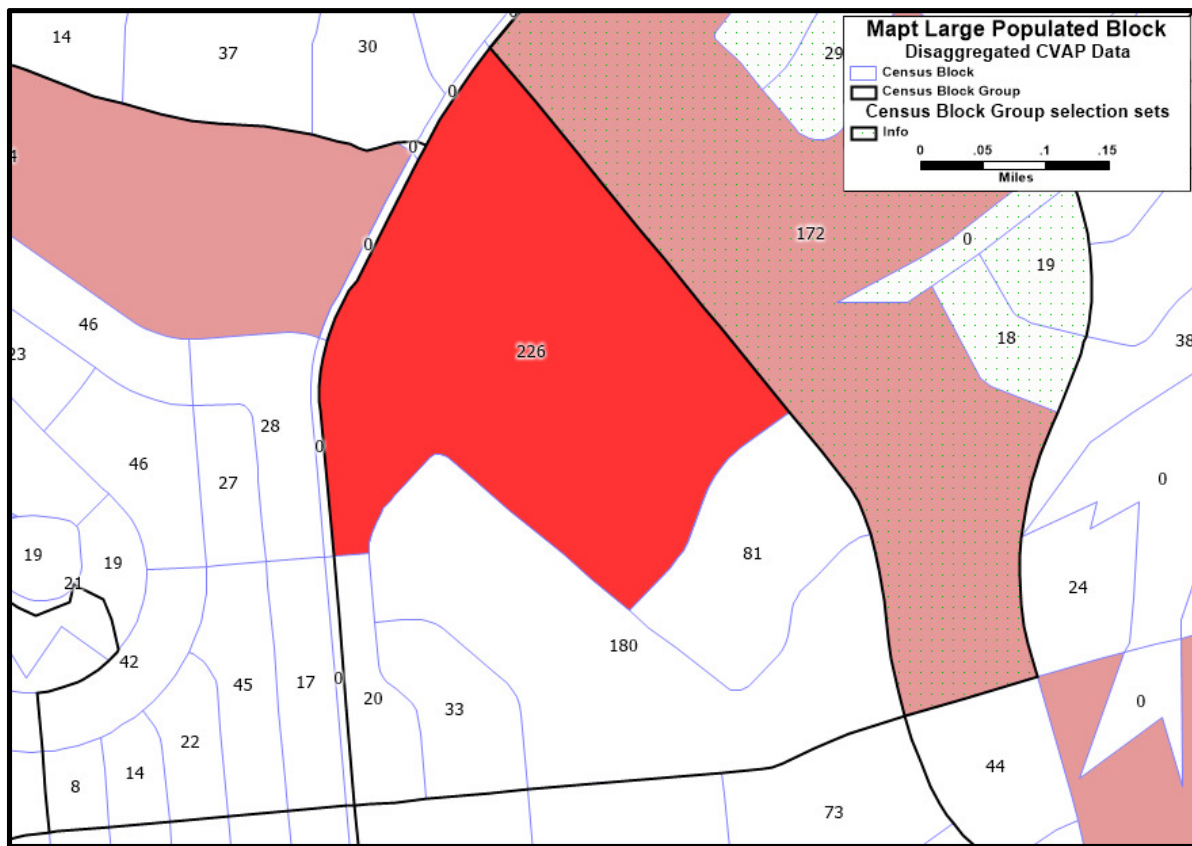
Source: Maptitude for Redistricting data for Virginia Beach, VA

Figure 6 – Block Group 518100422024 Highlighting Largest Populated Block

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[11] Regarding this second step, the Maptitude for Redistricting Documentation states: *Each user attribute field is disaggregated to the Census Block level by distributing the count for each higher-level district to its component blocks or block pieces. The portion assigned to each piece is determined using a weighting field (e.g. Population). These values are truncated to integers, any block count below the minimum threshold is changed to zero, and finally any remainder is then assigned to the largest component block in the district. Where two or more districts intersect a block, each will contribute to the block. The result is an attribute field at the block level containing the disaggregated data.* The documentation uses the term "district" in place of the commonly used geographic area such as block group or VTD.

The disaggregation process of Maptitude that determines the CVAP for each block is shown in tabular form in Table 3. The first column is the short label of the block ID. Each row represents a different census block with the largest populated block at the bottom. The second column contains the VAP for each census block while the third column contains the VAP for the block group. The fourth column is the weighted amount that will be used to determine the CVAP at the block level. This is calculated by using the block VAP divided by the block group VAP.

The fifth column shows the CVAP for the block group that will be divided up to each census block. The sixth column (Step 1 DisAggr) contains the calculated CVAP for each census block. It is calculated by multiplying the Weighted % by the block/block group CVAP.

The seventh column displays whole CVAP without the fractional amount for each census block. The eighth column provides the fractional change in each census block population due to stripping away or adding to the largest populated block (1.26012 persons). The ninth column shows the stripped away disaggregated CVAP amount for each block except for the largest populated block that includes the added fractional amount totaling the whole number of 226 (224.73988 plus 1.26012 equals 226).

	VAP	VAP	Weight	CVAP	Step 1		Fraction	Step 2
BlockID	**Block**	**BG**	**%**	**BG**	**DisAgg1**	**Stripped**	**Change**	**DisAgg2**
004	26	692	3.8%	540	20.28902	20	-0.28902	20
003	43	692	6.2%	540	33.55491	33	-0.55491	33
002	104	692	15.0%	540	81.15607	81	-0.15607	81
001	231	692	33.4%	540	180.26012	180	-0.26012	180
000	288	692	41.6%	540	**224.73988**		**1.26012**	**226**
Sum of fractions of persons that are added to largest Pop block (000)						**1.26012**		

Table 3 – Block Disaggregation Process for Block Group 518100422021

Source: Maptitude for Redistricting census block disaggregated data; U.S. Census Bureau American Community Survey 2013-2017 5-Yr data, 2010 Decennial Population data; Report calculations using Maptitude for Redistricting disaggregation technique.

<u>Measuring the Impact of the Largest Populated Block Disaggregation Technique</u>

The increase in the largest populated block would be worrisome if the city council districts were made up of only a few census blocks. However, the Illustrative Plan's districts are made up of hundreds of census blocks (400 census blocks for District 1 and 633 for District 2 in the initial Illustrative Plan).[12] Thus, aggregating hundreds of census blocks reduces or eliminates any error associated with the assignment of the largest populated block.

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[12] Calculated by counting the district's census blocks that are contained within the district plan block assignment or equivalency file.

In order to truly grasp the minute impact of Maptitude's disaggregation technique, I analyzed the entire district to measure the difference. Instead of performing the disaggregation process that was mentioned in Table 3 for a single block group, I perform this analysis on the entire Illustrative Plan.

To perform the analysis, an Excel spreadsheet was setup with all census blocks and the relevant data fields as shown in Table 3. As before, the same calculation of weight%, the first step of disaggregation, the conversion of all census population to integers, and the calculations of the total amount fraction change amount are included.

The key to analyzing the effect of adding the largest populated census block lies with summing all of the fractional population pieces that are contained within each district. If an area contains a split block group containing the largest populated census block it will be slightly higher and if the district contains only the remaining census blocks (where the stripped fraction population occurred), it will be slightly lower. However, because the vast majority of split block groups that contain the largest populated block also contain the census blocks that had their population fractions stripped off, the two offset each other.

The proof of this offset lies with the final change in population when all of the fractions of persons and the largest populated block are added together in a district. Table 4 demonstrates that District 1's CVAP was lowered by a little over five (5) people for the entire district (-5.09305). The HBA CVAP was lowered a little less than five persons (-4.63910). District 2 had even less of an impact, with 0.11179 persons for the CVAP and 0.85174 for the HBA CVAP. Given the minute differences, the impact is thus trivial.

Further evidence of this practically non-existent change is seen when the HBA CVAP% is calculated using the values without using the largest populated block and comparing it to Maptitude's disaggregation values (using the largest populated block technique). Calculating disaggregation without using the largest populated block technique is achieved by dividing the HBACVAP17 DisAggr column by the CVAP17 DisAggr column for each district.

The HBA CVAP% calculation appears to be exactly the same when they are compared using two (2) decimal places. Both processes, calculated to 50.03% for District 1 and 50.04% for District 2. In order to view any difference, at least three (3) decimal places must be taken in consideration.[13]

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[13] Three of the other districts (Districts 3-10), showed a difference of .01%.

**Table 4 -Illustrative Plan's Population Impact of Largest Populated Block Technique**

Dist	CVAP17 DisAggr	CVAP17 Strp	CVAP DISAG	CVAP17 Chg	CVAP17		
01	29766.09305	29641	29761	-5.09305	29761		
02	32803.88821	32642	32804	0.11179	32804		
03	31961.85648	31819	31960	-1.85648	31960		
04	33799.93322	33623	33802	2.06678	33802		
05	34688.84486	34407	34689	0.15514	34689		
06	34443.57816	34140	34447	3.42184	34447		
07	35686.66521	35367	35686	-0.66521	35686		
08	33657.33407	33485	33660	2.66593	33660		
09	32840.24399	32637	32843	2.75601	32843		
10	34851.55528	34651	34848	-3.55528	34848		

Dist	HBA CVAP17 DisAggr	HBAC17 Strp	HBA DISAG	HBAC17 Chg	HBA CVAP17	HBA CVAP17% Mapt	HBA CVAP17% Mapt wo/LPB
01	14892.63910	14770	14888	-4.63910	14888	50.03%	50.03%
02	16414.14826	16235	16415	0.85174	16415	50.04%	50.04%
03	13364.47424	13218	13365	0.52576	13365	41.82%	41.81%
04	10612.27770	10435	10612	-0.27770	10612	31.39%	31.40%
05	7131.76589	6861	7133	1.23411	7133	20.56%	20.56%
06	7428.54973	7128	7430	1.45027	7430	21.57%	21.57%
07	5228.71792	4928	5228	-0.71792	5228	14.65%	14.65%
08	9655.04044	9476	9658	2.95956	9658	28.69%	28.69%
09	8862.08495	8665	8863	0.91505	8863	26.99%	26.99%
10	7561.30030	7364	7559	-2.30030	7559	21.69%	21.70%

Source: Maptitude for Redistricting census block disaggregated data; U.S. Census Bureau American Community Survey 2013-2017 5-Yr data, 2010 Decennial Population data; Illustrative Plan Block Assignment List; Results from Microsoft Excel's consolidation function

Note: wo/LDB calculates districts's HBA CVAP% using disaggregation without the Largest Populated Block technique.

In addition, analysis for all of the Alternative Plans reveal that at most the majority HBA CVAP district plans using Maptitude's largest populated block only deviate .03% or less (see Appendix B).

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Finally, the random distribution of the largest populated block tends to reduce its impact. This is due to the overpopulation occurring in a random manner as a district splits block groups. Figure 7 below reveals the random nature of the distribution of the largest populated block. There is no geographic pattern associated with is location.
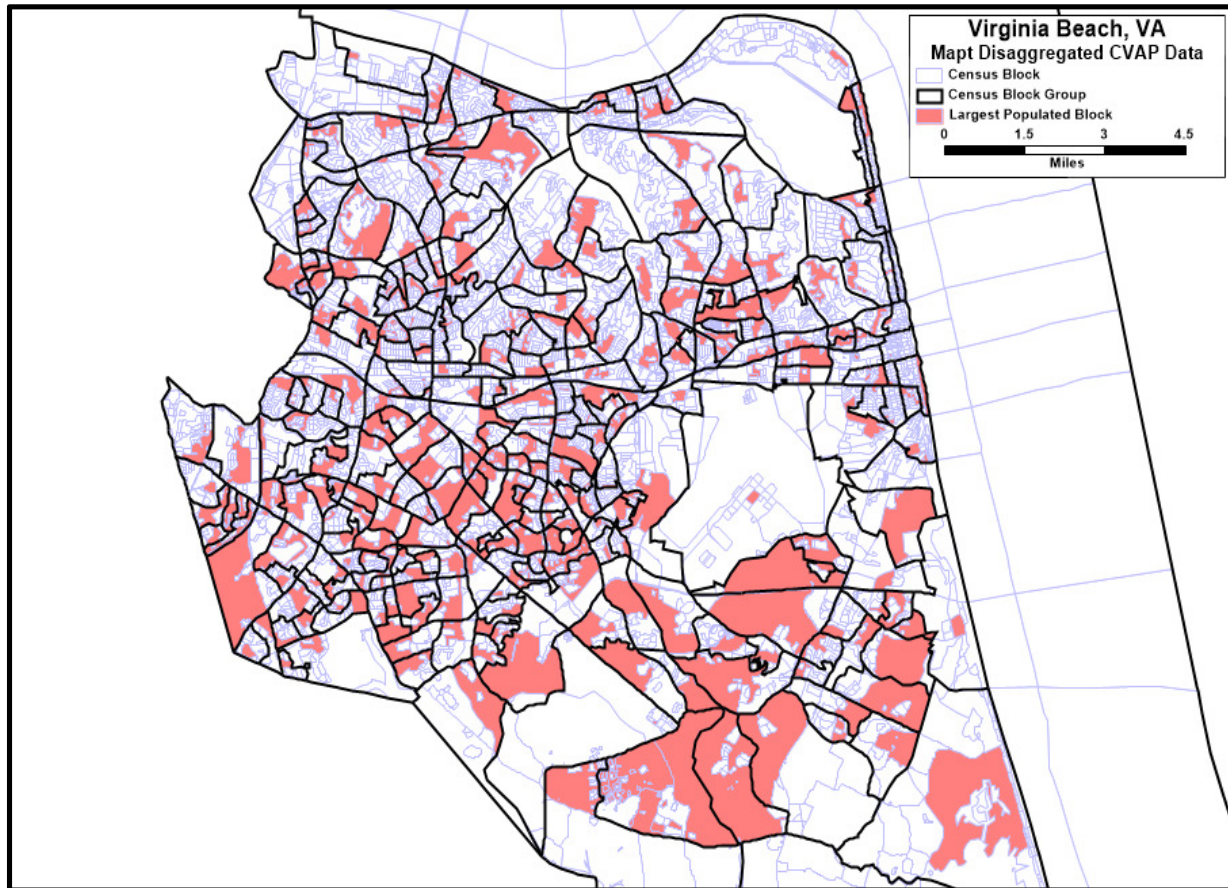
Source: Maptitude for Redistricting Census Block and Block Group Data

Figure 7 – Depiction of the Largest Populated Census Block

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Further evidence that the assignment of the largest populated block with the fractional population is not an issue centers on Dr. Morrison's own results. First, Dr. Morrison validates Maptitude's disaggregation process by replicating the process using his own IPF method and returning virtually the same results. His results for the Illustrative Plan were a 49.99% CVAP for District 1 and 49.96% for District 2. My results, using Maptitude's disaggregation process, were 50.03% for District 1 and 50.04% for District 2, respectively. This yields a difference of .04% for District 1 and .08%. for District 2. As stated previously in this report, these amounts are extremely negligible, Dr. Morrison's values round to 50%, and he appears to use a different weighting population (total population) than I do (voting age population).[14]

In addition, Dr. Morrison's results tend to validate the actual amounts that I originally calculated. In essence, two different disaggregation processes were used, and the results were extremely close to each other. This duplicated processing verifies that the disaggregation amounts determined using the Maptitude method are the actual CVAP values for the Illustrative Plan's Districts 1 and 2.

Given all of these factors, I conclude that overall the Maptitude disaggregation process produces reliable disaggregated CVAP values. As I noted above, Maptitude is a widely used application for redistricting and its disaggregation method is a commonly used and reliable technique in the field (see Appendix C).

VI. Response to Dr. Morrison's Claim Regarding an Alleged Assumption of HBA Political Cohesiveness and Communities

Dr. Morrison states that my use of Hispanic, Black, and Asian population data presumes that political cohesiveness exists between Hispanics, Blacks, and Asians. He states that I "*concocted [an] aggregate of three distinct protected minorities (Hispanics, Blacks, and Asians).* He also states that: "*This 'tripart minority coalition' district presumes political cohesion among Hispanics, Blacks, and Asians (an embedded assumption without support).* This argument is nonsensical, for a number of reasons which I outline below.

First, by design, the very purpose of the effort was to focus on whether Hispanic, Black, and Asian CVAP could form a majority in single-member districts. In order to do so, one must consider and aggregate the Hispanic, Black and Asian population data together. It would not make much sense to try to determine whether a majority HBA CVAP district could be drawn by only looking at the black CVAP, for example.

Second, my report provides no opinion on the cohesiveness of minority voters, nor is any proof of the cohesiveness of minority voters necessary to meet the first prong or precondition of *Gingles*.[15] As stated before, the precondition reads:

> "The minority group must be able to demonstrate that it is sufficiently large and geographically compact to constitute a majority in a single-member district."

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[14] The data provided by Dr. Morrison did not contain label descriptions, but appear to reflect the use of total population and not voting age population.

[15] Thornburg v. Gingles, 478 U.S. 30 (1986)

It is my understanding that the political cohesiveness of the HBA population will be addressed by other experts retained by Plaintiffs.

It is also worth stating that Dr. Morrison does not address at all the analysis shown in my initial report that further shows that Hispanics, Blacks, and Asians share common communities and form communities of interest in Virginia Beach. Dr. Morrison's claims seem to suggest that Hispanics, Black, and Asians do not exist in common communities to form a majority minority district. Again, my unrebutted analysis in my initial report shows that is not the case.

Reviewing census tracts from 1990 to recent years shows a growing community of Hispanic, Black and Asians. In 1990, there was only one majority HBA (Total Population) census tract in the city of Virginia Beach.[16] However, according to the 2013 – 2017 5-Year ACS data (2015MP), 10 census tracts now have a combined HBA majority. These 2013-2017 majority HBA communities[17] are located near the western center of Virginia Beach and toward the west and north-west Norfolk & Chesapeake boundary areas of the city (see Figure 8).

A review of the location of these majority HBA census tracts reveals that they are growing only in certain locations of the city. Simply put, HBA persons have chosen to reside in the same areas of the city.

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[16] 1990 Decennial Census Survey census tract level
[17] A census tract usually contains one or more neighborhoods within its boundary.
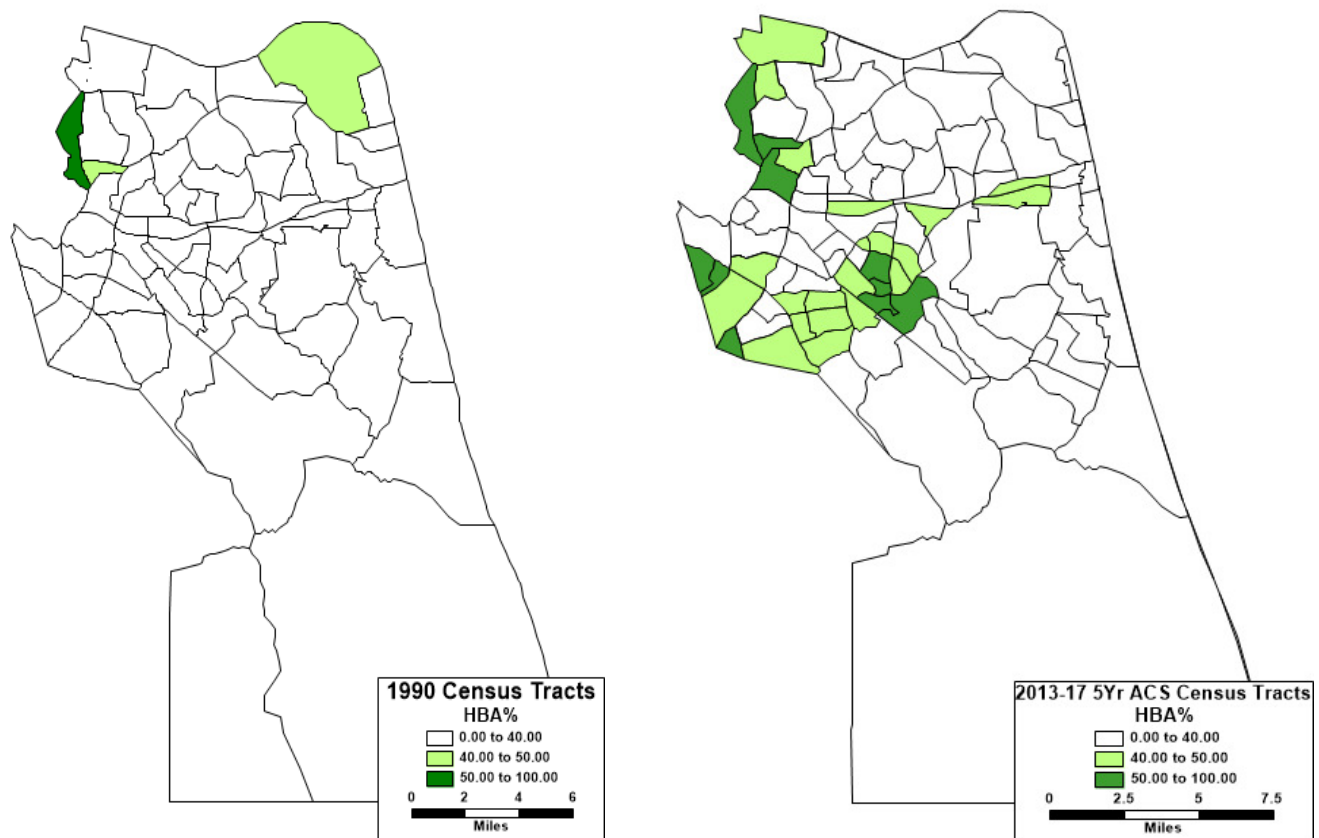
Figure 8 – Virginia Beach, VA Maj. HBA (Total Race) Census Tracts
(1990 Decennial Census & 2013-2017 5Yr ACS)

Note: Race categories are Alone (Single Race) Not Hispanic categories
Source: U.S. Census Bureau PL94-171 data for 1990; 2013 - 2017 5-Year ACS data

Additional evidence is shown by reviewing the dot density maps. This provides a different perspective yet yields similar conclusions.

Figures 9, 10, and 11 depict the distribution of Hispanic, Black, and Asian populations throughout the city. Each red dot on the map represents 500 persons residing within the census tract for each respective race/ethnicity. Collectively, the red dots of Hispanic, Black, or Asian population are centered mostly around census tracts that are greater than 40% or 50% HBA.

In fact, reviewing data that sums each race/ethnicity in the census tracts that have greater than 40% HBA verifies that most Hispanic, Black, and Asian persons reside in the same communities. Table 5 shows that 31 of Virginia Beach's 100 census tracts contain 54.90% of the HBA combined population. The same census tracts contain 45.50% of the Hispanic population, 59.02% of the Black population, and 52.20% of the Asian population.
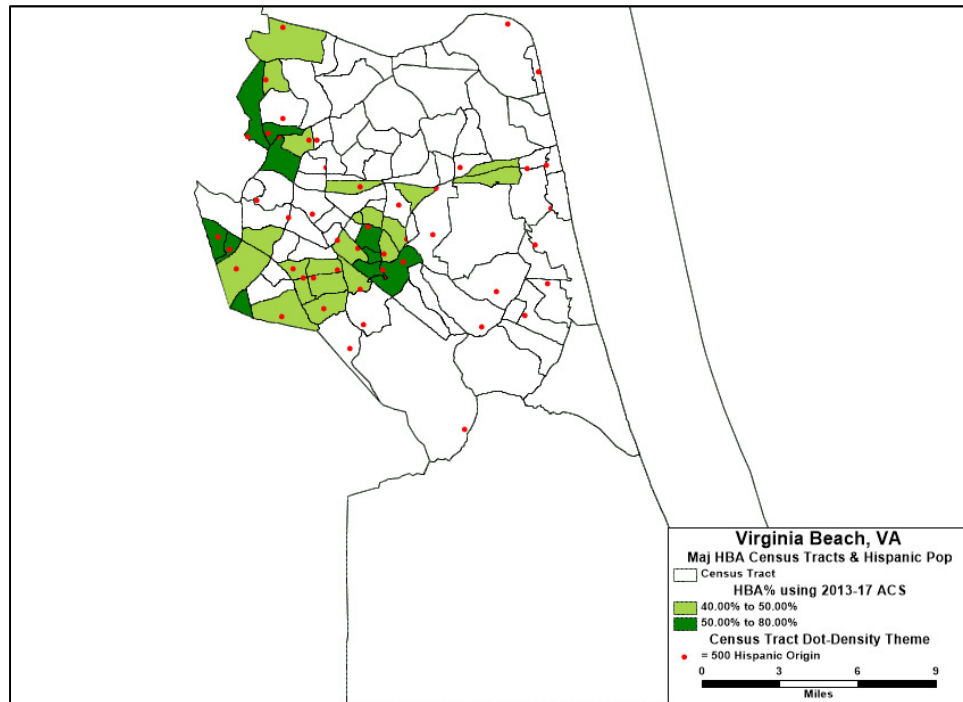
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Figure 9 – Virginia Beach, VA Maj. HBA (Total Race) Census Tracts
(with Hispanic Dot Density Points using 2013-2017 5Yr ACS)
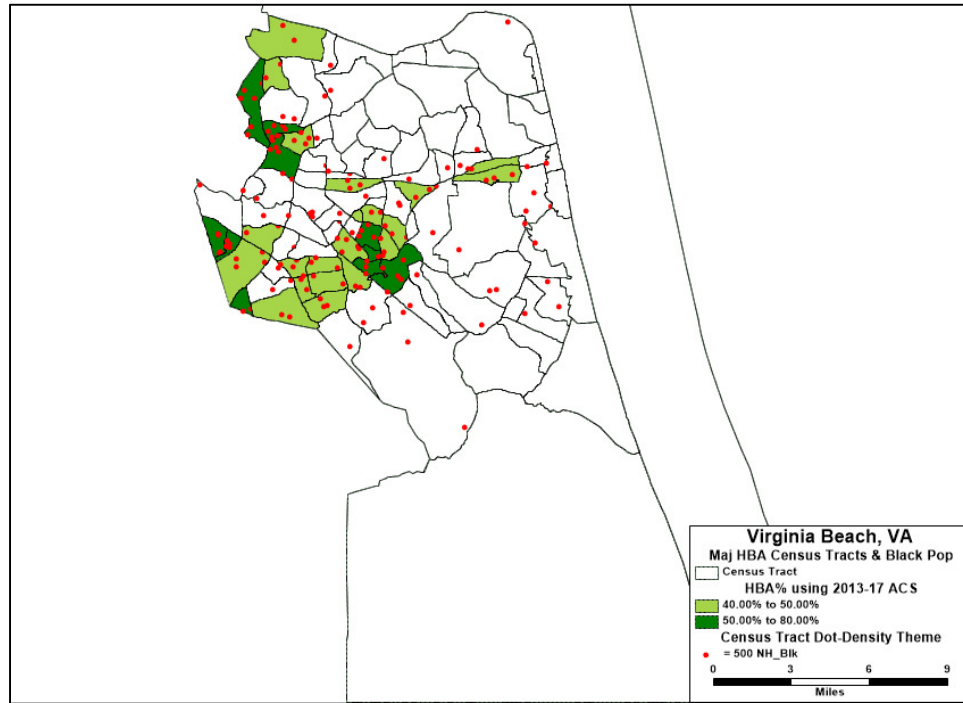
Figure 10 – Virginia Beach, VA Maj. HBA (Total Race) Census Tracts
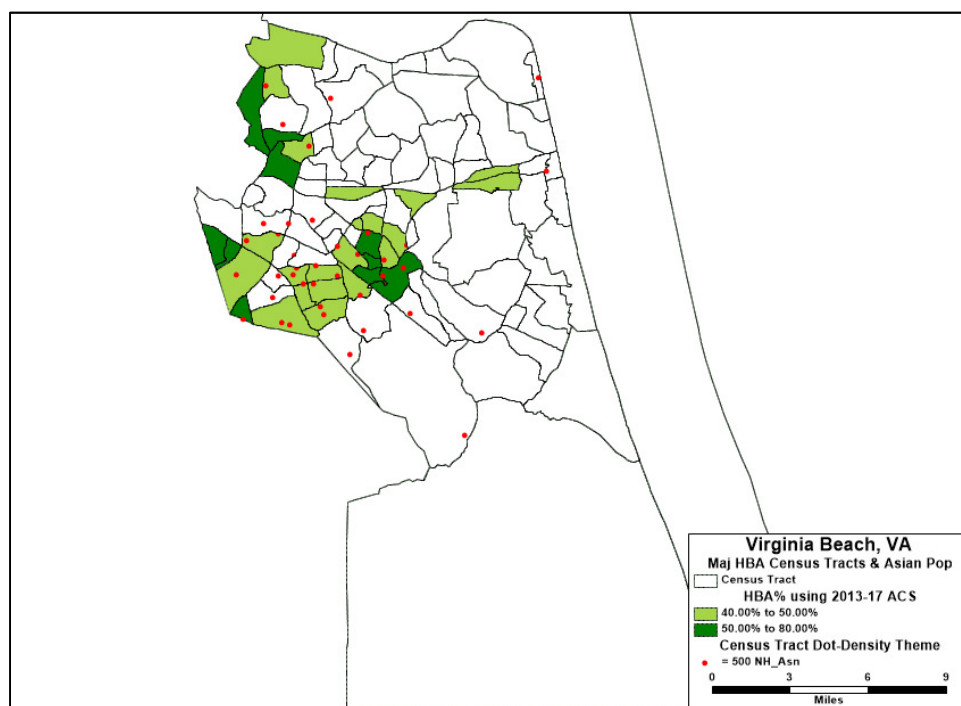(with Black Dot Density Points using 2013-2017 5Yr ACS)

Figure 11 – Virginia Beach, VA Maj. HBA (Total Race) Census Tracts
(with Asian Dot Density Points using 2013-2017 5Yr ACS)

Table 4 – VAB Population of HBA Residing in >40% and >50% HBA Census Tracts

HBA% CT	# CTs	Hispanic	Black	Asian	HBATTL
>40%	31	13188	49113	13735	76036
>50%	10	4629	22381	4102	31112
City Total	100	28987	83210	26312	138509
HBA% CT	# CTs	Hispanic%	Black%	Asian%	HBATTL%
>40%	31	45.50%	59.02%	52.20%	54.90%
>50%	10	15.97%	26.90%	15.59%	22.46%
City Total	100	100.00%	100.00%	100.00%	100.00%

Note: HBATTL – Total Hispanic, Black, and Asian combined persons (Not Hispanic Black and Asian categories); and CT - Census Tract
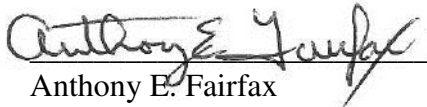
Source: U.S. Census Bureau 2013-2017 5-Year ACS data using Maptitude for Redistricting Dataview Statistical Summary option

Finally, not only do the maps show that the Hispanic, Black, and Asian populations tend to reside in HBA census tracts, close inspection of the maps reveals a similar pattern outside of the majority HBA census tracts. Thus, even where a census tract is not majority HBA, the HBA population tends to reside in those areas.

VII. Conclusions

After addressing all of Dr. Morrison's concerns, I stand by my original conclusion that the minority population in the city of Virginia Beach, VA is sufficiently large and geographically compact to enable the creation of two single-member majority Hispanic, Black and Asian combined districts.

I, Anthony E. Fairfax, am over the age of 18 and fully competent to make this declaration. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Anthony E. Fairfax
August 26, 2019